Replacement Instructions (Continued)

Installation Flow Chart

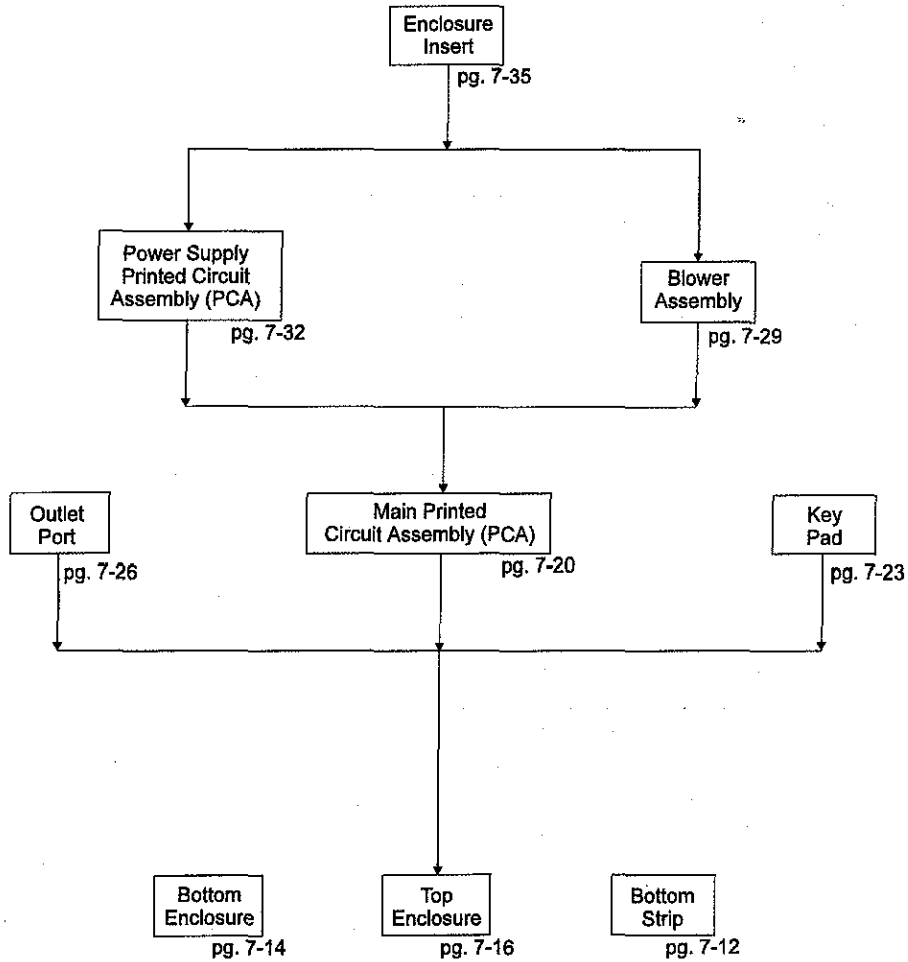


Figure 7-3
Installation Flow Chart

Chart Usage: Determine which item is to be installed then follow the line of flow down to the "Top Enclosure" and begin the installation process. Detailed procedures begin on the referenced page numbers.

7.4.1 Bottom Strip Replacement

Replacement Part Number 622122

Included in Kit:	Tools Required:
Bottom strip	Isopropyl alcohol Cleaning cloth

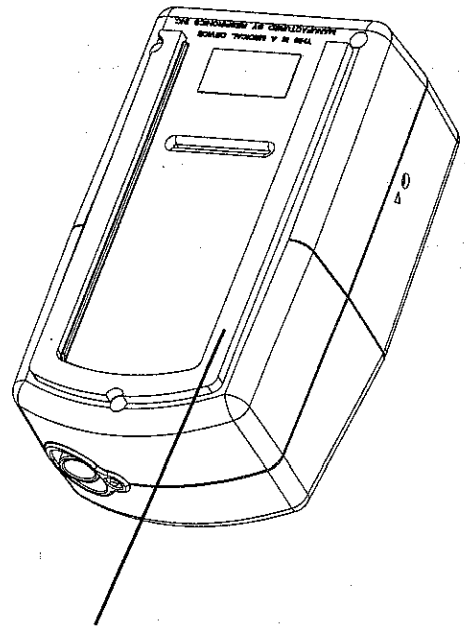
Procedure

Removed / Installed During Process:

- Bottom strip

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Repairs made to these devices must be performed only in an antistatic, ESD-protected environment.



Bottom Strip Replacement (Continued)

Step 1 Removing the Bottom Strip

a. Place the unit on a protected work surface and carefully turn it over, exposing the bottom.

b. Starting at one end, peel the bottom strip from the bottom enclosure.

c. Use a cleaning cloth with a small amount of isopropyl alcohol to remove any adhesive residue remaining on the bottom enclosure.

Step 2 Installing the Bottom Strip

a. Remove the protective backing from the bottom strip.

b. Align the bottom strip with the rib on the bottom enclosure.

c. Starting at one end, set the bottom strip in place.

d. Press the bottom strip firmly in place.

e. Carefully return the unit to the upright position.

7.4.2 Bottom Enclosure Replacement

Replacement Part Number 1000828

Included in Kit:	Tools Required:
Bottom enclosure (w / foam baffle and bottom strip) Warning Label 8-11 x 3/4" screw (x3)	Phillips screwdriver (medium)

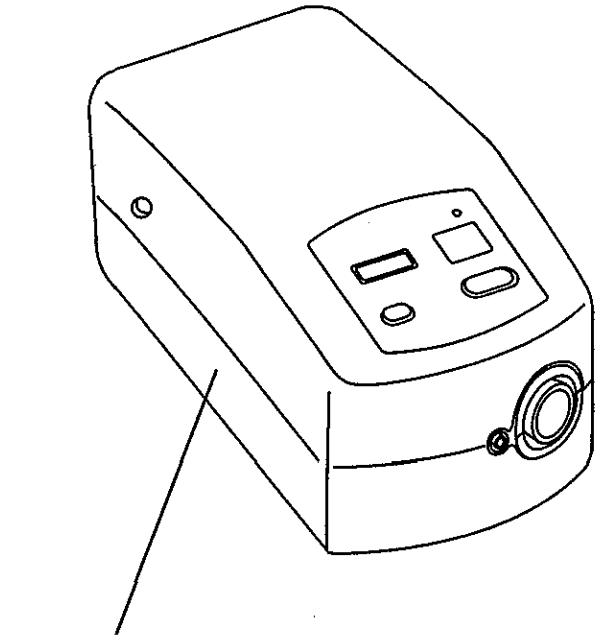
Procedure

Removed / Installed During Process:

- Bottom enclosure

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Repairs made to these devices must be performed only in an antistatic, ESD-protected environment.



Bottom Enclosure Replacement (Continued)

Step 1 Removing the Bottom Enclosure

a. Place the unit upside down on a protected work surface.

b. Using a Phillips screwdriver, remove the three screws that secure the bottom enclosure to the top enclosure.

c. Lift the bottom enclosure from the rest of the unit.

d. Carefully, and away from the unit, turn the bottom enclosure over and remove the screws.

Step 2 Installing the Bottom Enclosure

a. Align and place the bottom enclosure onto the enclosure insert.

NOTE: *Ensure that the outlet port is properly seated in the bottom enclosure.*

b. Install and secure the three screws.

c. Return unit to upright position.

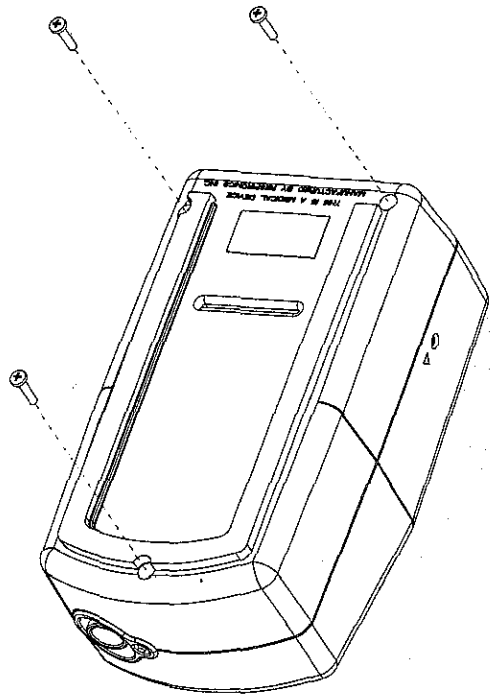


Figure 7-4
Removing the Bottom Enclosure Screws

7.4.3 Top Enclosure Replacement

Replacement Part Number 1000829

Included in Kit:	Tools Required:
Top enclosure 8-11 x 3/4" screw (x3) Tinnerman fastener (x2)	Phillips screwdriver (medium)

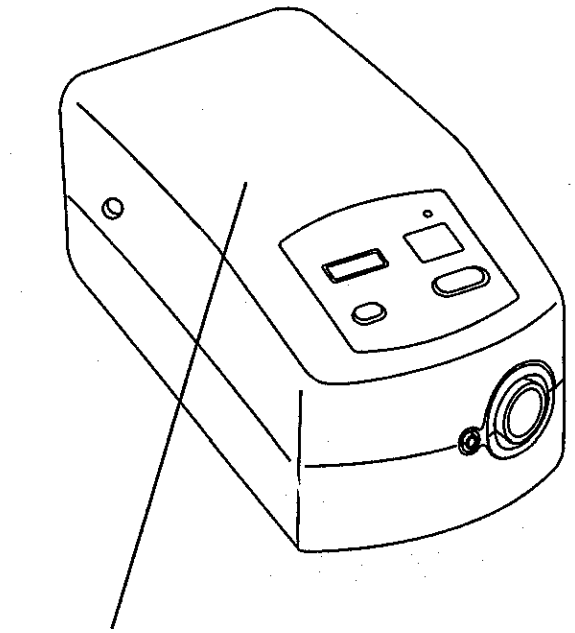
Procedure

Removed / Installed During Process:

- Top enclosure
- Main PCA
- Key pad

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Repairs made to these devices must be performed only in an antistatic, ESD-protected environment.



Top Enclosure

Top Enclosure Replacement (Continued)

Step 1 Removing the Top Enclosure

a. Place the unit on a protected work surface and carefully turn it over, exposing the bottom.

b. Using a Phillips screwdriver, remove the three screws that secure the top enclosure to the bottom enclosure.

c. While securely holding the top and the bottom enclosure together, carefully return the unit to its upright position.

d. Partially separate the top enclosure from the bottom enclosure.

NOTE: The top enclosure is still connected to the unit via the blower cable and the power supply PCA cable. These will be removed during the following steps.

e. Lift the top enclosure and hold it slightly above the unit to provide access to the blower cable and the power supply PCA cable.

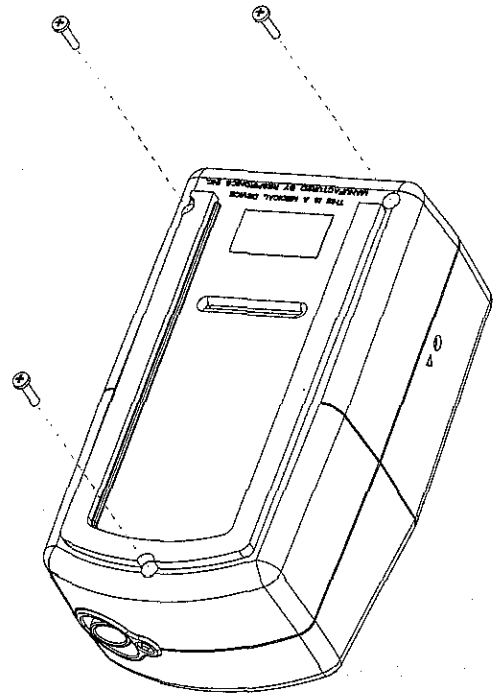


Figure 7-5
Location of the Screws

Top Enclosure Replacement (Continued)

f. Remove the blower cable and the power supply PCA cable connectors by gently pulling them straight out from their receptacles. The top enclosure is now free from the rest of the unit.

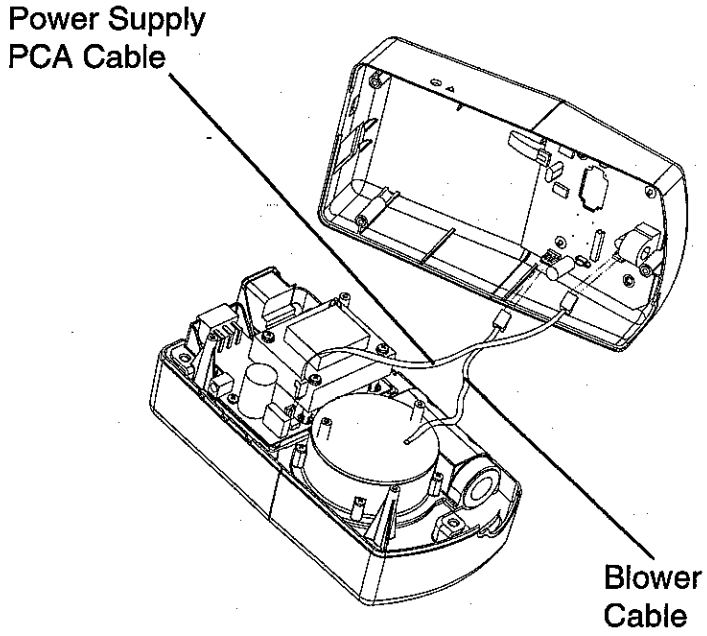


Figure 7-6
Removing the Blower and Power Supply PCA Cables

Step 2 *Removing the Main PCA*

Remove:
- two Tinnerman fasteners
- main PCA

(See Section 7.4.4 for more detailed instructions on removing the Main PCA.)

Step 3 *Removing the Key Pad*

Remove:
- key pad

(See Section 7.4.5 for more detailed instructions on removing the key pad.)

Step 4 *Installing the Key Pad*

Install:
- key pad

(See Section 7.4.5 for more detailed instructions on installing the key pad.)

Top Enclosure Replacement (Continued)

Step 5 Installing the Main PCA

Install:
- main PCA
- two Tinnerman fasteners

(See Section 7.4.4 for more detailed instructions on installing the Main PCA.)

Step 6 Installing the Top Enclosure

a. Ensure that the outlet port is still properly seated in the bottom enclosure.

b. While holding the top enclosure *slightly above the unit*, align the blower cable and power supply PCA cable connectors with their receptacles on the Main PCA. Press the connectors into their receptacles until completely seated.

c. Align the top enclosure with the bottom enclosure then set it in place.

NOTE: Ensure that the outlet port is still properly seated in the *bottom* enclosure.

d. While securely holding the top and bottom enclosure together, carefully turn the unit upside down.

e. Insert and tighten the three Phillips screws to secure the top enclosure to the bottom enclosure.

f. Return the unit to its upright position.

7.4.4 Main Printed Circuit Assembly (Main PCA) Replacement

REMstar LX Replacement Part Number 1000830

REMstar Plus LX Replacement Part Number 1001414

Included in Kits:	Tools Required:
Main PCA	Phillips screwdriver (medium)
Tinnerman fastener (×2) (Retaining ring)	Side-cutters

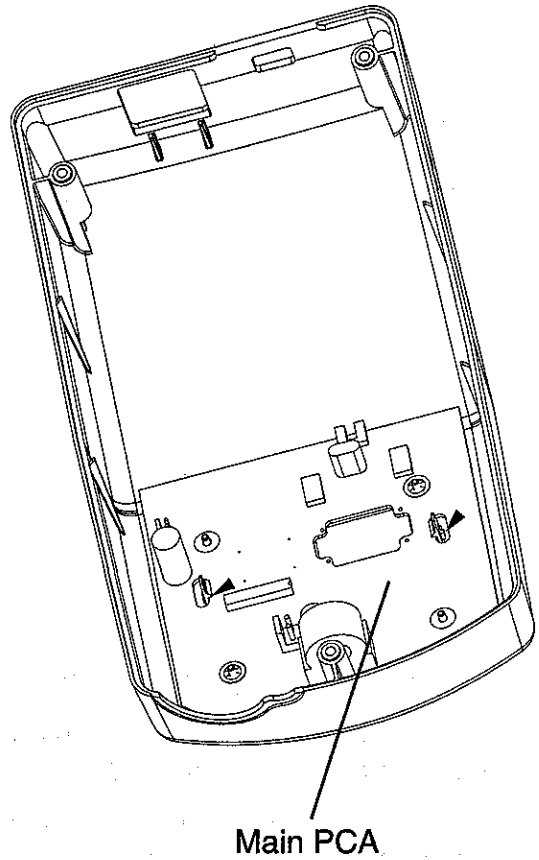
Procedure

Removed / Installed During Process:

- Top enclosure
- Main PCA

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Repairs made to these devices must be performed only in an antistatic, ESD-protected environment.



Main PCA Replacement (Continued)

Step 1 Removing the Top Enclosure

Remove:
- three screws
- blower cable and power supply PCA cable
- top enclosure

(See Section 7.4.3 for more detailed instructions on removing the top enclosure.)

Step 2 Removing the Main PCA

a. Place the top enclosure on a protected work surface and carefully turn it over, exposing the underside.

b. Using side-cutters, remove the Tinnerman(retaining ring) fasteners.

c. Move the Main PCA locking tabs away from the Main PCA then lift the Main PCA straight up from the top enclosure.

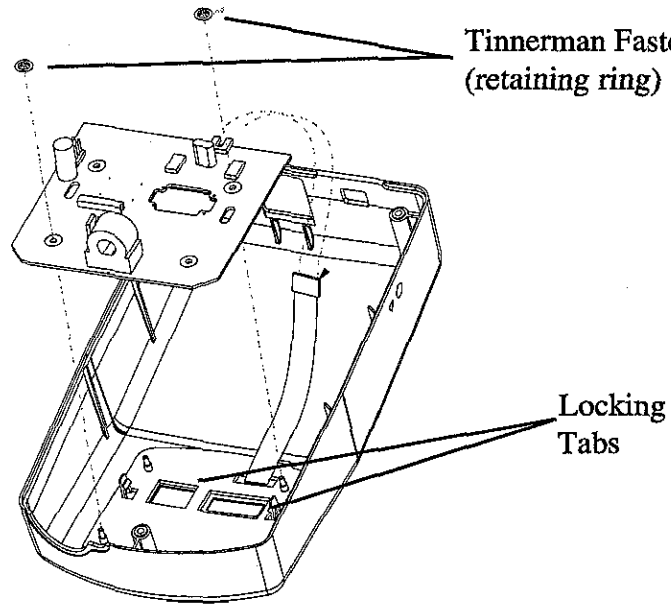


Figure 7-7
Removing the Main PCA

Main PCA Replacement (Continued)

Step 3 Installing the Main PCA

a. Align the Main PCA with the four mounting posts and gently press into the top enclosure until the locking tabs "snap" into place. Note that the ribbon cable side of the Main PCA must point towards the back of the top enclosure.

b. Secure the Main PCA with the two new Tinnerman fasteners.

Step 4 Installing the Top Enclosure

Install:
- top enclosure
- blower cable and power supply PCA cable
- three screws

(See Section 7.4.3 for more detailed instructions on installing the top enclosure.)

7.4.5 Key Pad Replacement

REMstar LX Replacement Part Number 1000826

REMstar Plus LX Replacement Part Number 1001415

Included in Kits:	Tools Required:
Key pad Isopropyl alcohol	Phillips screwdriver (medium) Flat-blade screwdriver (small) *Cleaning cloth*

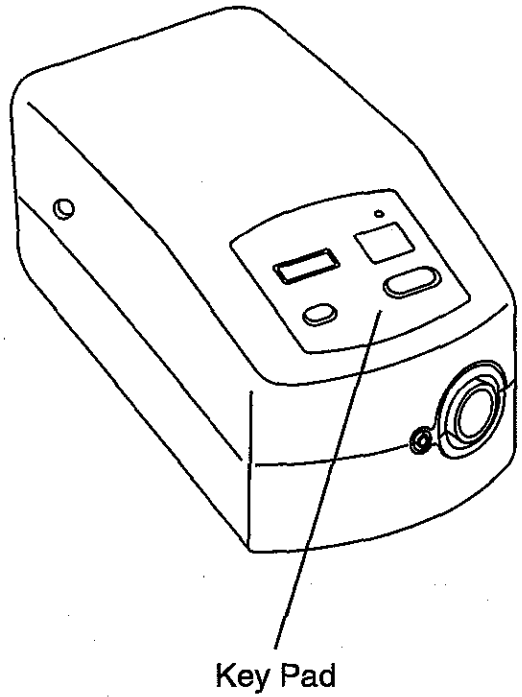
Procedure

Removed / Installed During Process:

- Top enclosure
- Main PCA
- Key pad

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Repairs made to these devices must be performed only in an antistatic, ESD-protected environment.



Key Pad Replacement (Continued)

Step 1 Removing the Top Enclosure

Remove:
- three screws
- blower cable and power supply PCA cable
- top enclosure

(See Section 7.4.3 for more detailed instructions on removing the top enclosure.)

Step 2 Removing the Main PCA

Remove:
- two Tinnerman fasteners
- main PCA

(See Section 7.4.4 for more detailed instructions on removing the Main PCA.)

Step 3 Removing the Key Pad

a. Working from the inside of the top enclosure, place a flat-blade screwdriver onto the exposed portion of the key pad, next to the ribbon cable. Gently push until the key pad is partially lifted.

b. Working from the outside of the top enclosure, carefully lift upwards on the key pad and remove it from the top enclosure.

NOTE: A small amount of isopropyl alcohol may be used during the removal process.

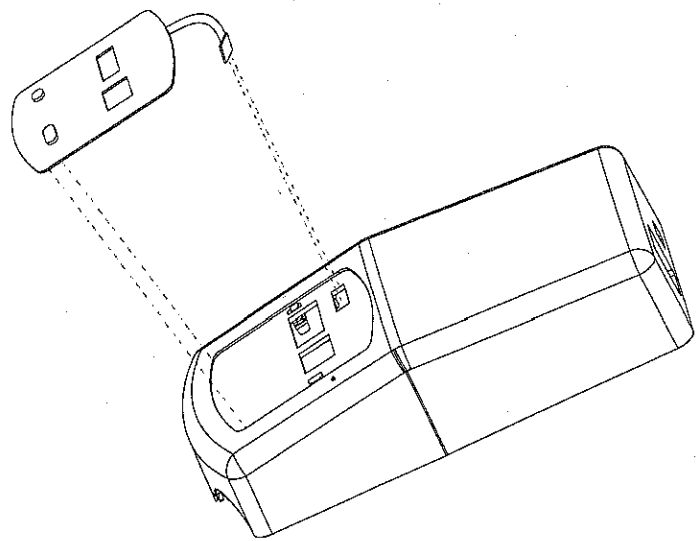


Figure 7-8
Removing the Key Pad

Key Pad Replacement (Continued)

c. As the key pad is being removed, the ribbon cable must be fed through the opening in the top enclosure.

d. Use a small amount of isopropyl alcohol on a cleaning cloth to remove any adhesive residue from the surface of the top enclosure.

Step 4 *Installing the Key Pad*

a. Remove the protective backing from the back of the key pad (make sure the backing under the ribbon cable is removed).

b. Feed the key pad ribbon cable through the opening in the top enclosure.

c. Starting with the front edge, align the key pad with the indentation in the top enclosure then set in place.

d. Using a rubbing motion, press the key pad firmly onto the top enclosure.

Step 5 *Installing the Main PCA*

Install:
- main PCA
- two Tinnerman fasteners

(See Section 7.4.4 for more detailed instructions on installing the Main PCA.)

Step 6 *Installing the Top Enclosure*

Install:
- top enclosure
- blower cable and power supply PCA cable
- three screws

(See Section 7.4.3 for more detailed instructions on installing the top enclosure.)

7.4.6 Outlet Port Replacement

Replacement Part Number 1000827

Included in Kit:	Tools Required:
Outlet port	Phillips screwdriver (medium)

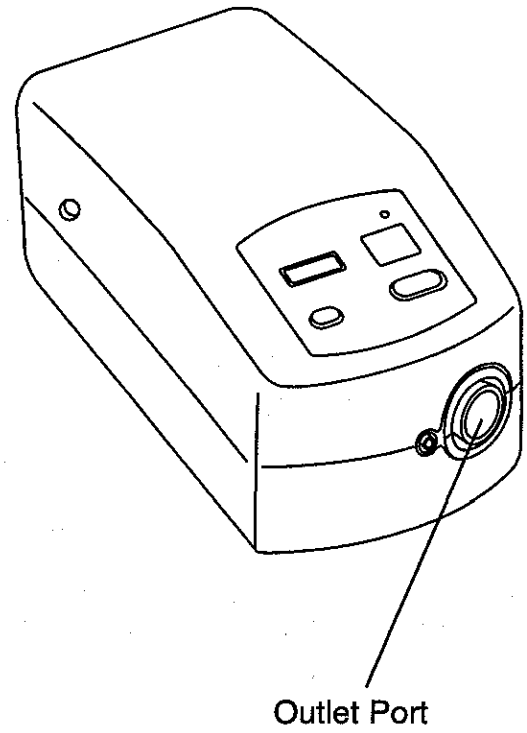
Procedure

Removed / Installed During Process:

- Top enclosure
- Outlet port

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Repairs made to these devices must be performed only in an antistatic, ESD-protected environment.



Outlet Port Replacement (Continued)

Step 1 Removing the Top Enclosure

Remove:
- three screws
- blower cable and power supply PCA cable
- top enclosure

(See Section 7.4.3 for more detailed instructions on removing the top enclosure.)

Step 2 Removing the Outlet Port

a. Remove the outlet port from the blower outlet by lifting upwards until the outlet port clears the bottom enclosure and pulling it straight out from the blower.

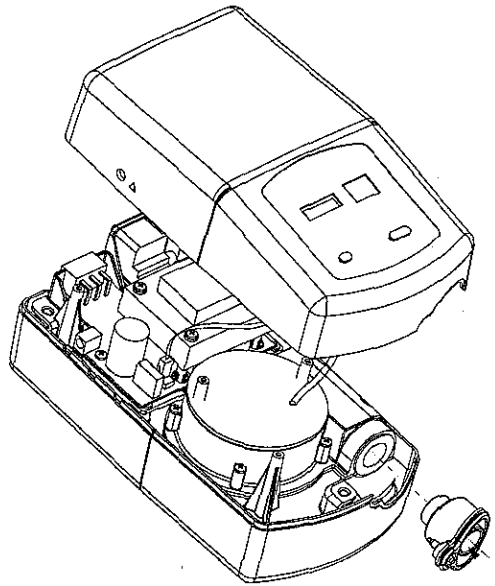


Figure 7-9
Removing the Outlet Port

Outlet Port Replacement (Continued)

Step 3 Installing the Outlet Port

a. Grasp the blower assembly and slightly lift the enclosure insert to allow the outlet port to clear the bottom enclosure and be inserted into the blower outlet.

b. Slowly lower the enclosure insert assembly into the bottom enclosure while ensuring that the outlet port is properly seating in the bottom enclosure. Note that the pressure fitting on the outlet port must point towards the middle of the bottom enclosure.

Step 4 Installing the Top Enclosure

Install:
- top enclosure
- blower cable and power supply PCA cable
- three screws

(See Section 7.4.3 for more detailed instructions on installing the top enclosure.)

7.4.7 Blower Assembly Replacement

Replacement Part Number 622115

Included in Kit:	Tools Required:
Blower assembly (w / foam baffle) Blower-to-enclosure insert seal *6-13 x 1" screw (x6)* Ferrite clamp-on (not used for this repair Pressure tubing (not used for this repair)	Phillips screwdriver (medium) Torque wrench (in-lbs.)

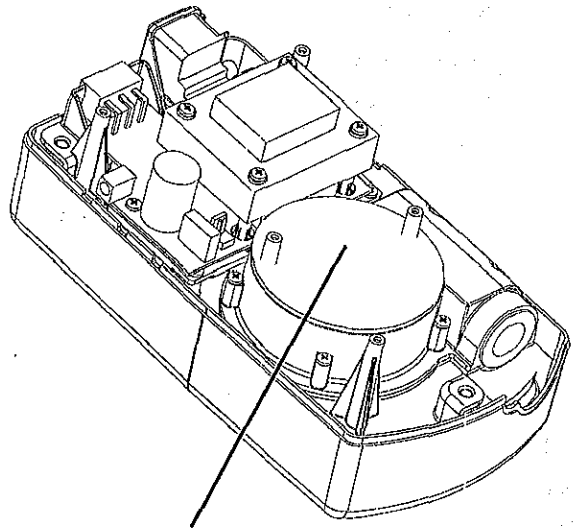
WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Repairs made to these devices must be performed only in an antistatic, ESD-protected environment.

Procedure

Removed / Installed During Process:

- Top enclosure
- Outlet port
- Blower assembly



Blower Assembly Replacement (Continued)

Step 1 *Removing the Top Enclosure*

Remove:
- three screws
- blower cable and power supply PCA cable
- top enclosure

(See Section 7.4.3 for more detailed instructions on removing the top enclosure.)

Step 2 *Removing the Outlet Port*

Remove:
- outlet port

(See Section 7.4.6 for more detailed instructions on removing the outlet port.)

Step 3 *Removing the Blower Assembly*

a. Using a Phillips screwdriver, remove the six screws securing the blower assembly to the enclosure insert.

b. While holding the enclosure insert in place, lift and remove the blower assembly.

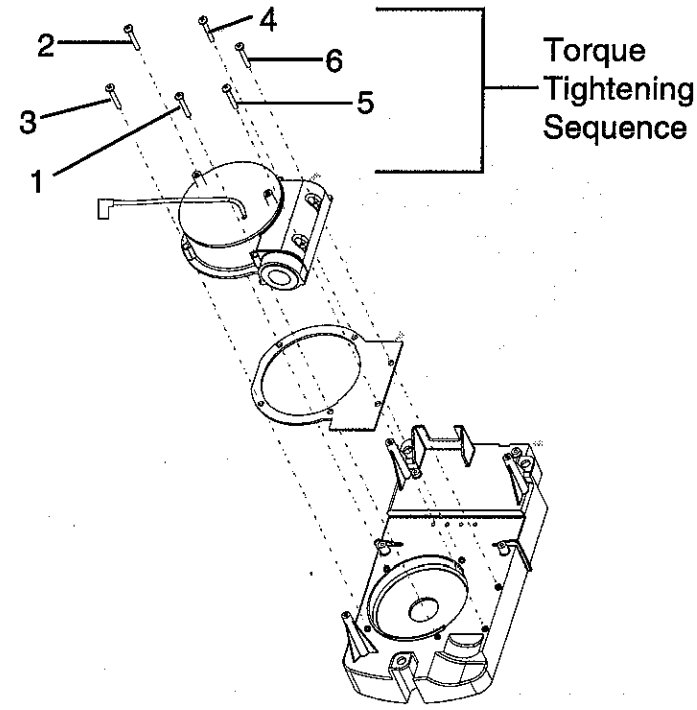


Figure 7-10
Removing the Blower Assembly

Blower Assembly Replacement (Continued)

NOTE: Some upward force on one of the edges may be necessary because the blower-to-enclosure insert seal will hold the two pieces together.

c. Remove the blower-to-enclosure insert seal.

Step 4 Installing the Blower Assembly

a. Position the blower-to-enclosure insert seal in place on the enclosure insert.

b. Align the blower assembly with the holes in the enclosure insert, then set the blower assembly in place.

c. Insert and tighten the six screws provided to secure the blower assembly to the enclosure insert.

NOTE: The screws securing the blower must be torqued to the numbered sequence in Figure 7-10.

NOTE: The screws should be torqued to a maximum of 6 in-lbs. Excessive torque may cause the blower impeller to contact the enclosure insert.

Step 5 Installing the Outlet Port

Install:
- outlet port

(See Section 7.4.6 for more detailed instructions on installing the outlet port.)

Step 6 Installing the Top Enclosure

Install:
- top enclosure
- blower cable and power supply PCA cable
- three screws

(See Section 7.4.3 for more detailed instructions on installing the top enclosure.)

7.4.8 Power Supply Printed Circuit Assembly (Power Supply PCA) Replacement

Replacement Part Number 622265

Included in Kit:	Tools Required:
Power supply PCA 6-13 x 3/8" screw (x2)	Phillips screwdriver (medium)

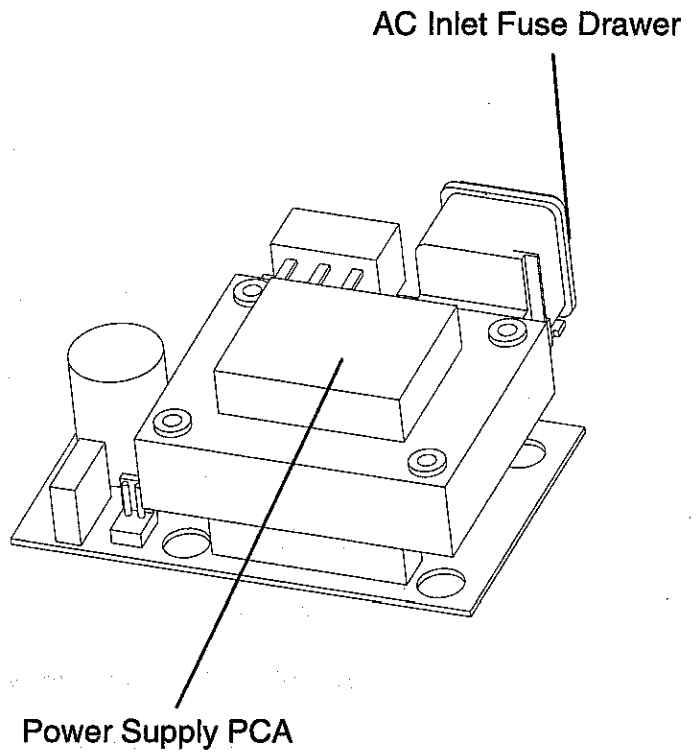
Procedure

Removed / Installed During Process:

- Top enclosure
- Power supply PCA

WARNING: Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Repairs made to these devices must be performed only in an antistatic, ESD-protected environment.



Power Supply PCA Replacement (Continued)

Step 1 Removing the Top Enclosure

Remove:
- three screws
- blower cable and power supply PCA cable
- top enclosure

(See Section 7.4.3 for more detailed instructions on removing the top enclosure.)

Step 2 Removing the Power Supply PCA

a. Using a Phillips screwdriver, remove the six screws securing the Power Supply PCA to the mounting plate on the enclosure insert.

NOTE: Four of the screws pass through the transformer.

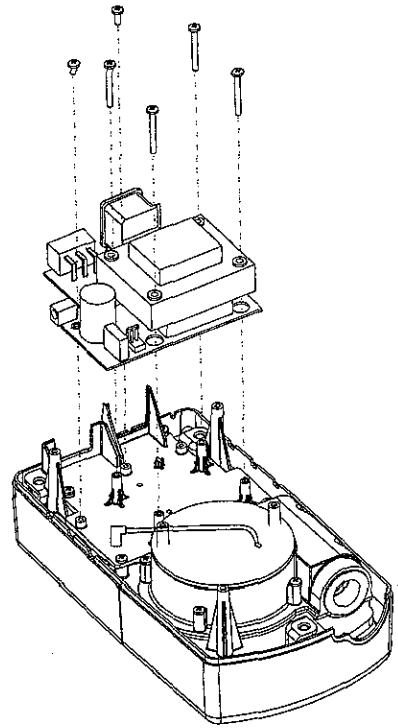


Figure 7-11
Removing the Power Supply PCA

Power Supply PCA Replacement (Continued)

b. While holding the enclosure insert in place, lift the power supply PCA from the mounting plate. It will be necessary to guide the AC input power receptacle from the cut-out in the enclosure insert.

Step 4 Installing the Power Supply PCA

a. Align the holes in the power supply PCA with the holes in the enclosure insert. Note that the AC power input receptacle must be guided into the cut-out in the enclosure insert.

b. Insert and tighten the six screws to secure the power supply PCA to the mounting plate on the enclosure insert.

NOTE: Four of the screws pass through the transformer.

Step 5 Installing the Top Enclosure

Install:
- top enclosure
- blower cable and power supply PCA cable
- three screws

(See Section 7.4.3 for more detailed instructions on installing the top enclosure.)

7.4.9 Enclosure Insert Replacement

Replacement Part Number 622119

Included in Kit:	Tools Required:
Enclosure insert (w / foam baffle)	Phillips screwdriver (medium)
Blower-to-enclosure insert seal	Torque wrench (in-lbs.)
6-13 x 1" screw (x6)	

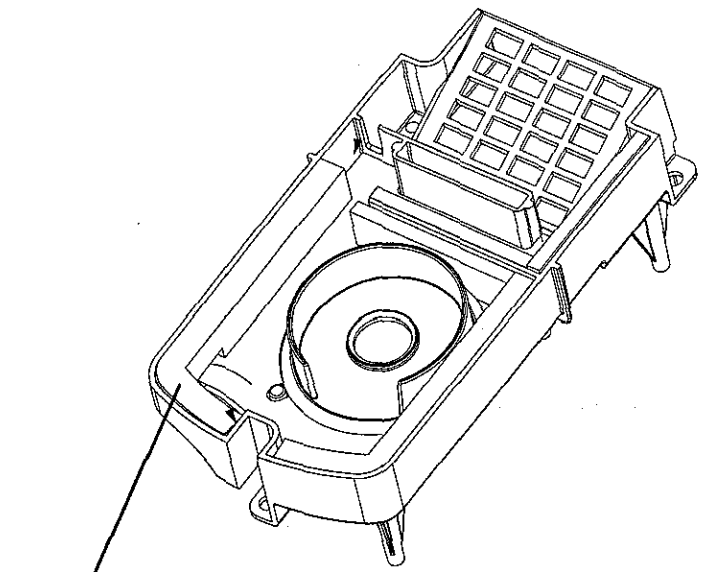
Procedure

Removed / Installed During Process:

- Top enclosure
- Main PCA
- Outlet port
- Blower assembly
- Power supply PCA
- Enclosure insert

WARNING: *Electrical shock hazard: Disconnect the electrical supply before attempting to make any repairs to the devices.*

CAUTION: Electronic components used in these devices are subject to damage from static electricity. *Repairs made to these* devices must be performed only in an antistatic, ESD-protected environment.



Enclosure Insert Replacement (Continued)

Step 1 *Removing the Top Enclosure*

Remove:
- three screws
- blower cable and power supply PCA cable
- top enclosure

(See Section 7.4.3 for more detailed instructions on removing the top enclosure.)

Step 2 *Removing the Main PCA*

Remove:
- two Tinnerman fasteners
- Main PCA

(See Section 7.4.4 for more detailed instructions on removing the Main PCA.)

Step 3 *Removing the Outlet Port*

Remove:
- outlet port

(See Section 7.4.6 for more detailed instructions on removing the outlet port.)

Step 4 *Removing the Blower Assembly*

Remove:
- six screws
- blower assembly

(See Section 7.4.7 for more detailed instructions on removing the blower assembly.)

Step 5 *Removing the Power Supply PCA*

Remove:
- six screws
- power supply PCA

(See Section 7.4.8 for more detailed instructions on removing the power supply PCA.)

Enclosure Insert Replacement (Continued)

Step 6 Removing the Enclosure Insert

a. While holding the bottom enclosure in place, lift the enclosure insert out of the bottom enclosure.

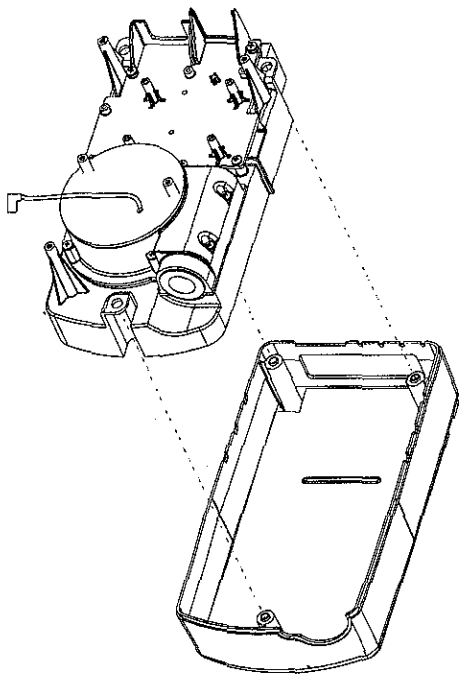


Figure 7-12
Removing the Enclosure Insert

Step 7 Installing the Enclosure Insert

a. Align the enclosure insert then place it into the bottom enclosure.

Step 8 Installing the Power Supply PCA

Install:
- power supply PCA
- six screws

(See Section 7.4.8 for more detailed instructions on installing the power supply PCA.)

Step 9 Installing the Blower Assembly

Install:
- blower assembly
- six screws

(See Section 7.4.7 for more detailed instructions on installing the blower assembly.)

Step 10 Installing the Outlet Port

Install:
- outlet port

(See Section 7.4.6 for more detailed instructions on installing the outlet port.)

Enclosure Insert Replacement (Continued)

Step 11 Installing the Main PCA

Install:
- main PCA
- two Tinnerman fasteners

(See Section 7.4.4 for more detailed instructions on installing the Main PCA.)

Step 12 Installing the Top Enclosure

Install:
- top enclosure
- blower cable and power supply PCA cable
- three screws

(See Section 7.4.3 for more detailed instructions on installing the top enclosure.)

Chapter 8: Testing

8.1 Testing Process 8-3

8.2 REMstar LX and REMstar Plus LX System Final Test 8-3

8.3 Run-in Test 8-6

8.4 Post Testing Pressure Setup (10.0 cm H_2O) 8-7

8.5 REMstar LX and REMstar Plus LX System Final Test Data Sheet 8-8

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Chapter 8: Testing

8.1 Testing Process

The following process should be followed after a repair has been done on the REMstar LX and REMstar Plus LX CPAP Systems (REMstar LX and REMstar Plus LX).

Perform the following in order:

1. System Final Test* (Section 8.2)
2. Run-in Test (Section 8.3)
3. System Final Test* (Section 8.2)
4. Post Testing Pressure Setup (Section 8.4)

*The same data sheet is used, but a column is provided to indicate Pre Run-in or Post Run-in Data.

NOTE: All testing for international units should be performed at the VAC setting for that specific country.

8.2 REMstar LX and REMstar Plus LX System Final Test

Purpose

This procedure provides performance testing of the units. The System Final Test will be used prior to and after the Run-in Test. Use the System Final Test Data Sheet in Section 8.5 to record test results.

CAUTION: Electronic components used in these devices are subject to damage from static electricity. Use and follow appropriate Electro-Static Discharge (ESD)-procedures.

Equipment

Digital Manometer (see Appendix A)

Regulated DC Power Supply or 12 V Battery* (see Appendix A)

Watt Meter (see Appendix A)

O_2 Enrichment Port (RI P/N 312010)

Whisper Swivel (RI P/N 332113)

Port Cap (supplied with unit) or Stopper

Test Orifice, 60 LPM @ 14.4 cm and 60 LPM @ 3.4 cm (RI P/N 622032)

REMstar LX and REMstar Plus LX System Final Test (Continued)

DC Power Cord* (RI P/N 1001956)

Battery Cable Adaptor* (RI P/N 532209)

6 ft. Smooth-Bor Tubing (RI P/N 301016)

* Used for optional DC testing only.

Equipment Setup

- Place the O_2 enrichment port onto the outlet port.
- Place the test orifice (60 LPM @ 3.4 cm – (large hole orifice) (RI P/N 622032)) onto the O_2 enrichment port.
- Connect the manometer to the test orifice using pressure tubing.
- Occlude the test orifice.
- Connect the AC power cord to the watt meter but do not connect to the unit at this time.

Procedure

Step 1 Minimum Pressure Test (4.0 cm H_2O)

a. Enter the Dealer mode by holding down the two User buttons on the key pad and plugging the AC power cord into the unit.

b. Verify the following:

- the blower is running in the unit; and
- the proper altitude setting is indicated on the display.

c. Press the left User button twice until the Pressure display appears.

d. Press the right User button until "4" is visible.

e. Occlude the test orifice. Verify the pressure on the manometer is 3.0 cm to 5.0 cm H_2O .

NOTE: Allow about 20-30 seconds for the pressure to stabilize.

f. Unocclude the test orifice. Verify that the 60 LPM @ 3.4 cm orifice (large hole orifice) is within the range of 3.4 – 5.0 cm H_2O pressure.

g. Subtract the open flow pressure reading (unoccluded) from the occluded pressure reading. This difference should be less than or equal to 1.0 cm H_2O.

REMstar LX and REMstar Plus LX System Final Test (Continued)

Step 2 Maximum Pressure Test (20.0 cm H_2O)

a. Connect the following:

- *6 ft. Smooth-Bor tubing to the outlet port on the unit.*
- Whisper Swivel II to the 6 ft. Smooth-Bor tubing.
- Test orifice 60 lpm @ 14.4 cm (small hole orifice) (RI P/ N 622032) to the Whisper Swivel II.
- Manometer and pressure tubing to test orifice.
- Occlude test orifice.

b. Ensure the unit blower is off. Unplug the AC power cord from the unit. The green LED will go out.

c. Enter the Dealer mode by holding down the two User buttons on the key pad and plugging the AC power cord into the unit. The same displays used for the Minimum Pressure Test should be visible.

d. Verify the following:

- the blower is running in the unit; and the ramp length is set to a non-zero value.
- the proper altitude setting is indicated on the display.

e. Press the left User button twice until the Pressure display appears.

f. Press the right User button until "20" appears.

g. Verify the pressure on the manometer is 17.75 cm to 22.25 cm H_2O.

h. Verify the watt meter reading is less than or equal to 30 watts.

i. Exit the Dealer mode by unplugging the unit or by holding the Blower On / Off button down and pressing the Ramp button once. Enter the User mode by plugging the AC power cord into the unit.

j. Press the Blower On / Off button to restart the blower.

NOTE: If a new blower assembly was installed, the wattage may initially be higher. After approximately five minutes of use, the wattage will reduce to within specifications.

k. Press the Ramp button and verify that the pressure drops below 5.0 cm H_2O. Pressure will increase in a linear fashion over time until the pressure setting is reached. Verify 1.0 cm H_2O increase in pressure during ramp operation.

l. Turn the blower off.

m. Unplug the AC power cord from the unit.

REMstar LX and REMstar Plus LX System Final Test (Continued)

Step 3 DC Operation (optional test)

This is an optional test that should be done if a repair was performed that affected the DC operation or if a problem is suspected in this area.

a. Connect the DC inlet plug to the unit.

b. Using the DC Battery Cable, connect to the Regulated DC Power Supply set to 12 VDC (±0.5 V) or to the battery.

c. Turn the unit on. Verify proper functioning by observing a non-zero pressure reading on the manometer. Once observed, turn the unit off.

d. Disconnect the power supply or battery, then remove the DC inlet plug.

8.3 Run-in Test

Purpose

This procedure provides instructions for performing a Run-in Test for the REMstar LX and REMstar Plus LX. The units will run for one hour at specified parameters to qualify the units after servicing. Use the System Final Test Data Sheet in Section 8.5 to record test results.

Equipment

Test Orifice, 60 LPM @ 14.4 cm (small hole)
(RI P/N 622032)

Equipment Setup

- Place test orifice onto the outlet port of the unit.

Procedure

Step 1 Enter the Dealer mode by holding down the two User buttons on the key pad and plugging the AC power cord into the unit.

Step 2 While in the Dealer mode, set the CPAP pressure to 10.0 cm H_2O. Exit the Dealer mode by unplugging the unit or by holding the Blower On / Off button down and pressing the Ramp button once.

Step 3 **REMstar Plus LX only** – Record the initial blower hours

Run-in Test (Continued)

(xxxxx.x hours) on the data sheet. (See Section 8.5.)

Step 4 Ensure a filter(s) and filter cap are installed in the units.

Step 5 Ensure that the test orifice (60 LPM @ 14.4 cm – (small hole) orifice (RI P/N 622032) is unoccluded.

Step 6 Turn the unit on by pressing the Blower On / Off button.

Step 7 Run-in for a minimum of 1 hour.

8.3.1 Post Run-in Test

Step 1 Turn the blower off by pressing the Blower On / Off button.

Step 2 Press the usage button and document B= xxxxx.x hours in the Final Blower Hours section on the data sheet.

Step 3 Verify that the blower usage increased by one hour or more from the initial reading in section 8.3 Step 3.

Step 4 Repeat the System Final Test (8.2) after the Run-in Test.

8.4 Post Testing Pressure Setup (10.0 cm H_2O)

Procedure

Step 1 Connect the following:

- 6 ft. Smooth-Bor tubing to the outlet port on the unit.
- Whisper Swivel II to the 6 ft. Smooth-Bor tubing.
- Test orifice 60 lpm @ 14.4 cm (small hole) (RI P / N 622032) to the Whisper Swivel II.
- Manometer and pressure tubing to test orifice.
- Occlude test orifice.

Step 2 Enter the Dealer mode by holding down the two User buttons on the key pad and plugging the AC power cord into the unit

Step 3 Verify that the pressure is still set to 10 cm/H_2O.

Step 4 Verify the pressure on the manometer is 8.5 cm to 11.5 cm H_2O.

Step 5 Use the System Final Test Data Sheet in Section 8.5 to record test results.

NOTE: The System Final Test Data Sheet may be photocopied for a record of unit performance.

8.5 REMstar LX and REMstar Plus LX System Final Test Data Sheet

System Final Test (see Section 8.2) **Serial No.** _____ **Model No.** _____

Test	Step	Specification	Actual		Pass	Fail
			Pre Run-in	Post Run-in		
Minimum Pressure (Occluded)	1.e	3.0 cm to 5.0 cm H_2O				
Minimum Pressure (Large Hole) 60 LPM @ 3.4 cm orifice	1.f	3.4 – 5.0 cm H_2O				
Pressure Differential	1.g	≤ 1.0 cm H_2O				
Maximum Pressure (Occluded)	2.g	17.75 cm to 22.25 cm H_2O				
Wattage	2.h	≤ 30 watts				
Ramp	2.k	Pressure drops below 5.0 cm H_2O and pressure increases				
DC Operation (optional)	3.c	Non-zero pressure reading				

Run-in Test (see Section 8.3)

Test	Step	Specification	Actual	Pass	Fail
Initial Blower Hours (REMstar Plus LXonly)	3	Record Hours (xxxxx.x)			
Final Blower Hours (REMstar Plus LX only)	9	At least one hour more than pre run-in blower hours			

Post Testing Pressure Setup (see Section 8.4)

Test	Step	Specification	Actual	Pass	Fail
Post Testing Pressure Setup	4	8.5 cm to 11.5 cm H_2O			

Reference No. _____ **Tested by: (Signature In Ink)** _____ **Date:** _____

Appendix A: Tools and Equipment

A.1 Service Tools and Supplies A-3

A.2 Acceptable Test Equipment..... A-4

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Appendix A: Tools and Equipment

A.1 Service Tools and Supplies

You should have the following hand tools and supplies available for troubleshooting, testing, and repairing the REMstar LX and REMstar Plus LX CPAP Systems (REMstar LX and REMstar Plus LX).

- Common Hand Tools

  Flat-blade screwdriver - small

  Phillips screwdriver - medium

  Side-cutters

- Antistatic, Electro-Static Discharge (ESD)-protected work station – minimum requirement is a grounded mat and wrist strap
- Battery, 12 Volt* – see Section A.2
- Battery Cable Adapter* (RI P/N 532209)
- *Cleaning cloth*
- DC Power Cord, optional (RI P/N 1000815)
- Digital Manometer – see Section A.2
- End Cap (supplied with unit)
- Isopropyl alcohol
- Mild detergent
- O_2 Enrichment Port
- Regulated DC Power Supply* – see Section A.2
- 6 ft. Smooth-Bor Tubing (RI P/N 301016)
- Test Orifice (RI P/N 622032)
- Torque wrench (in-lbs.)
- Watt Meter – see Section A.2

* Used for optional DC testing only.

A.2 Acceptable Test Equipment

A.2.1 Digital Manometer*

Specifications:

0 – 25 cm H_2O (or better)

±0.3 cm H_2O accuracy

±0.1 cm H_2O resolution

Acceptable Options:

- Respironics Digital Manometer (RI P/N 302227)
- Merical DP2001
- Sensym PDM 200CD
- RT-200
- Any commercially available digital manometer that meets the above specifications.

* A water column manometer may also be used.

A.2.2 Watt Meter

Specifications:

0 – 100 W

3% accuracy

1 W resolution

Acceptable Options:

- Yokogawa 2355 (digital)
- Simpson, Analog 0 – 150 W
- Extech DW 6060
- Any commercially available watt meter that meets the above specifications.

Acceptable Test Equipment (Continued)

A.2.3 Digital Multimeter

Specifications:

2.5 digit readout minimum

0.0 – 20.0 VDC

0.0 – 25.0 VAC

Acceptable Options:

- Fluke 83 or better model
- Any commercially available digital multi-meter that meets the above specifications.

A.2.4 Regulated DC Power Supply (optional)

Specifications:

12 volts DC (±0.5 V) output

Regulates to 5 amps.

Acceptable Options:

- Any commercially available power supply that meets the above specifications.

A.2.5 Battery (optional, for DC testing only)

Specifications:

12 volts DC

Acceptable Options:

- Any commercially available battery that meets the unit's input voltage and current requirements.

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Appendix B: Schematics

B.1 Schematic Statement B-3

B.2 REMstar LX Main Printed Circuit Assembly (PCA) B-4

B.3 REMstar Plus LX Main Printed Circuit Assembly (PCA) B-6

B.4 Power Supply Printed Circuit Assembly (PCA) B-8

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Appendix B: Schematics

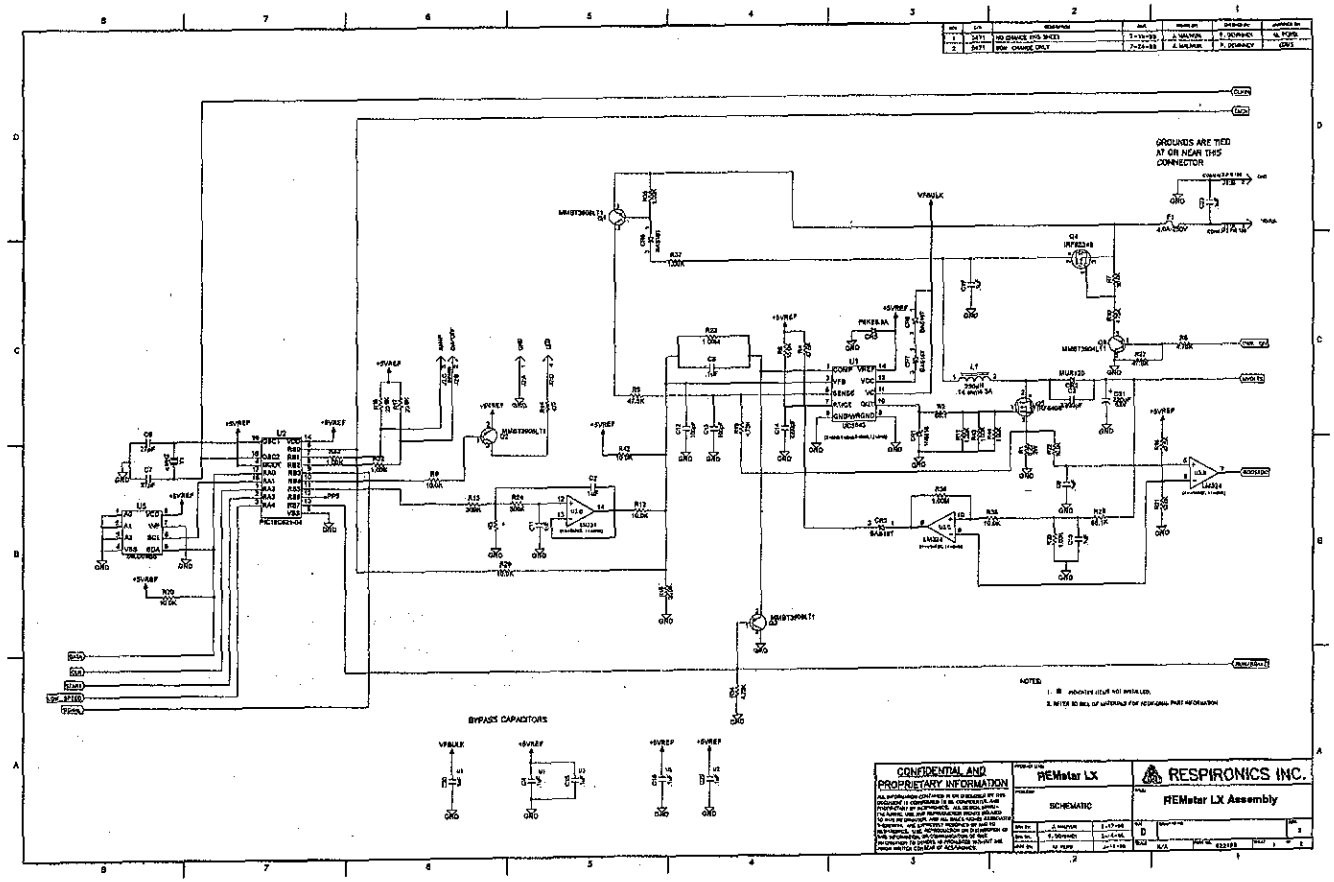
B.1 Schematic Statement

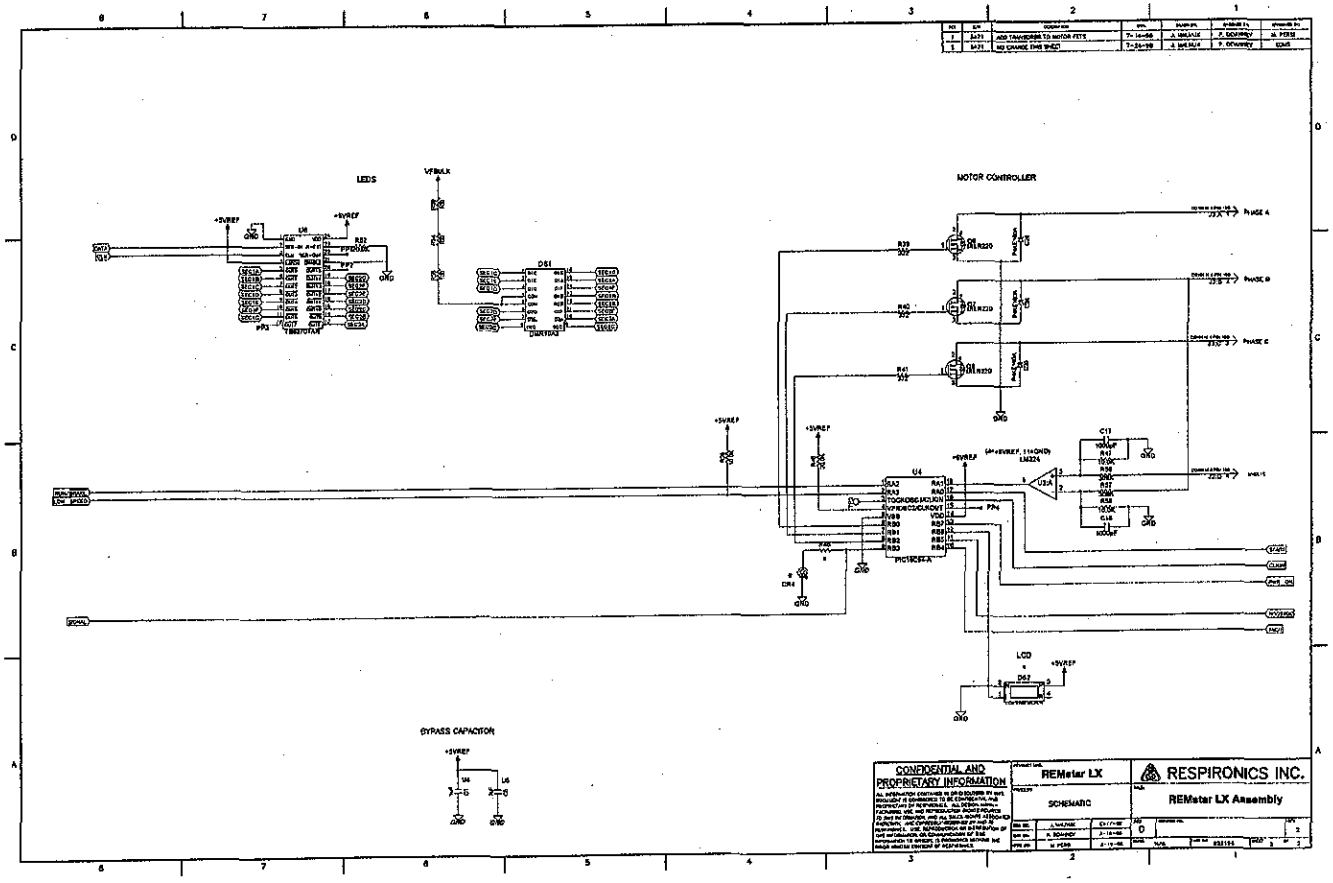
Schematics are supplied with this manual in direct support of the sale and purchase of this product.

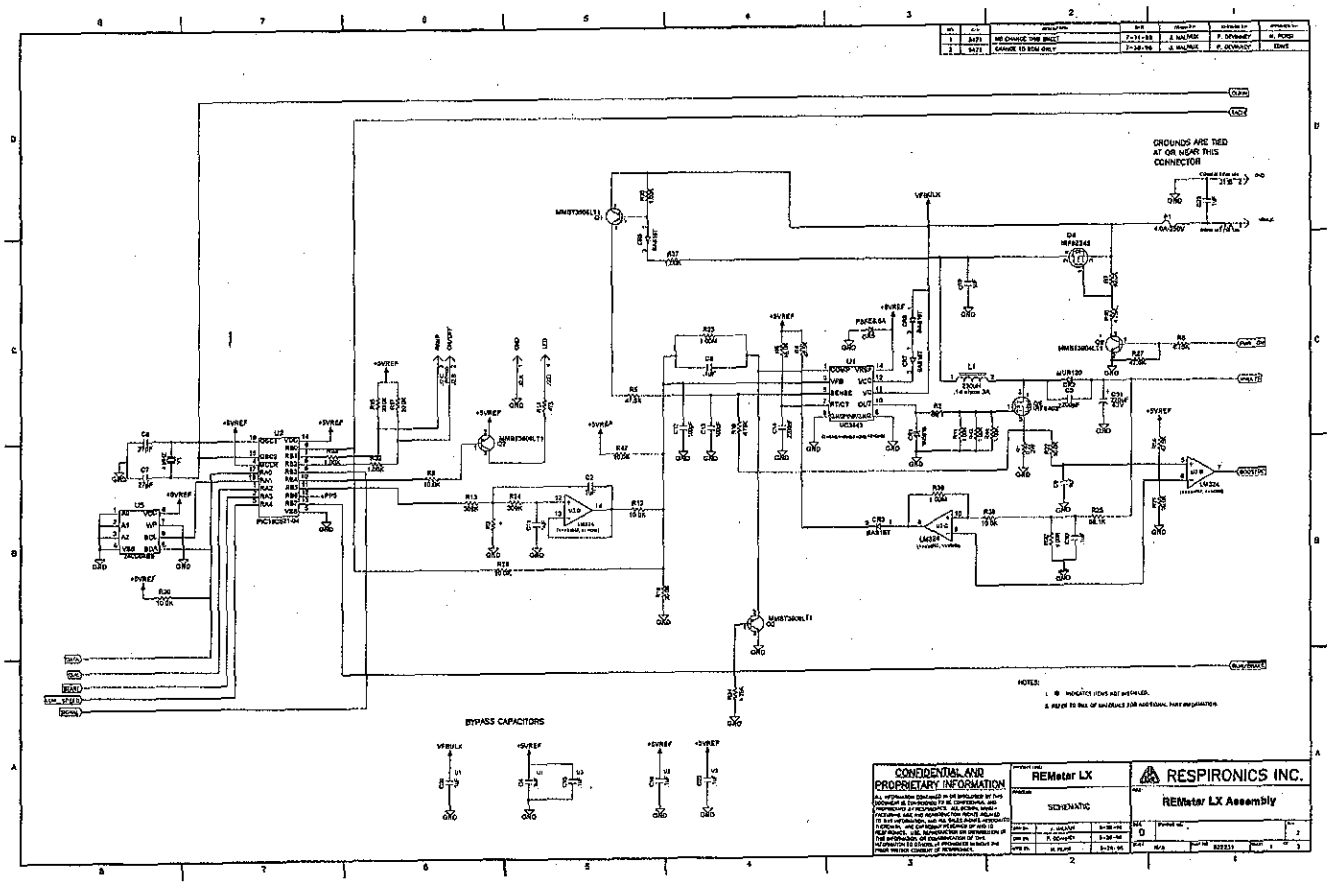
The schematics are proprietary and confidential. *Do not copy the* schematics or disclose them to third parties beyond the purpose *for which they are intended. Patents are pending.*

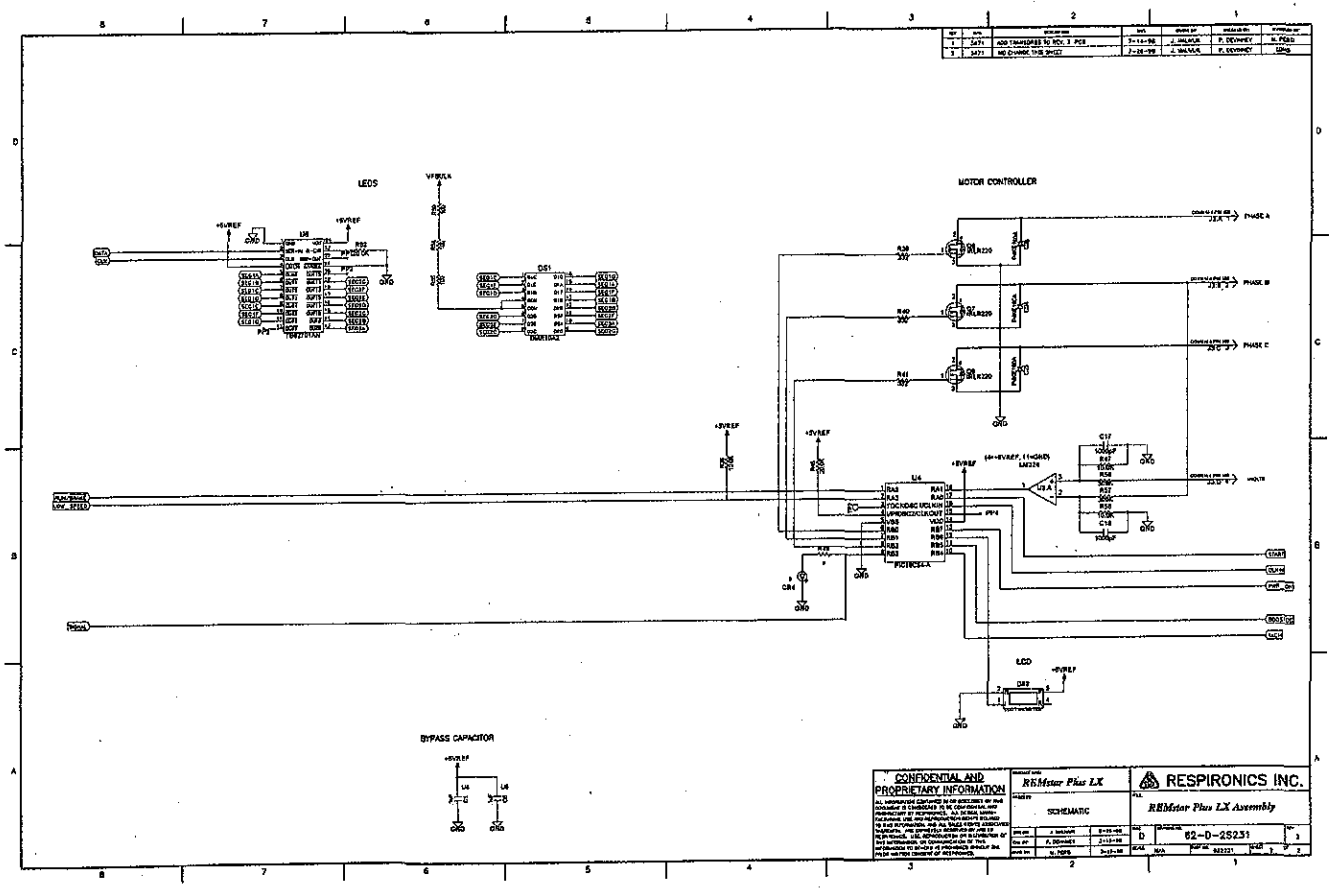
The schematics are intended to satisfy administrative requirements only. They are not intended to be used for component level testing and repair. Any changes of components could affect the reliability of the device, prohibit lot tracking of electronic components, and void warranties. Repairs and testing are supported only at the complete board level.

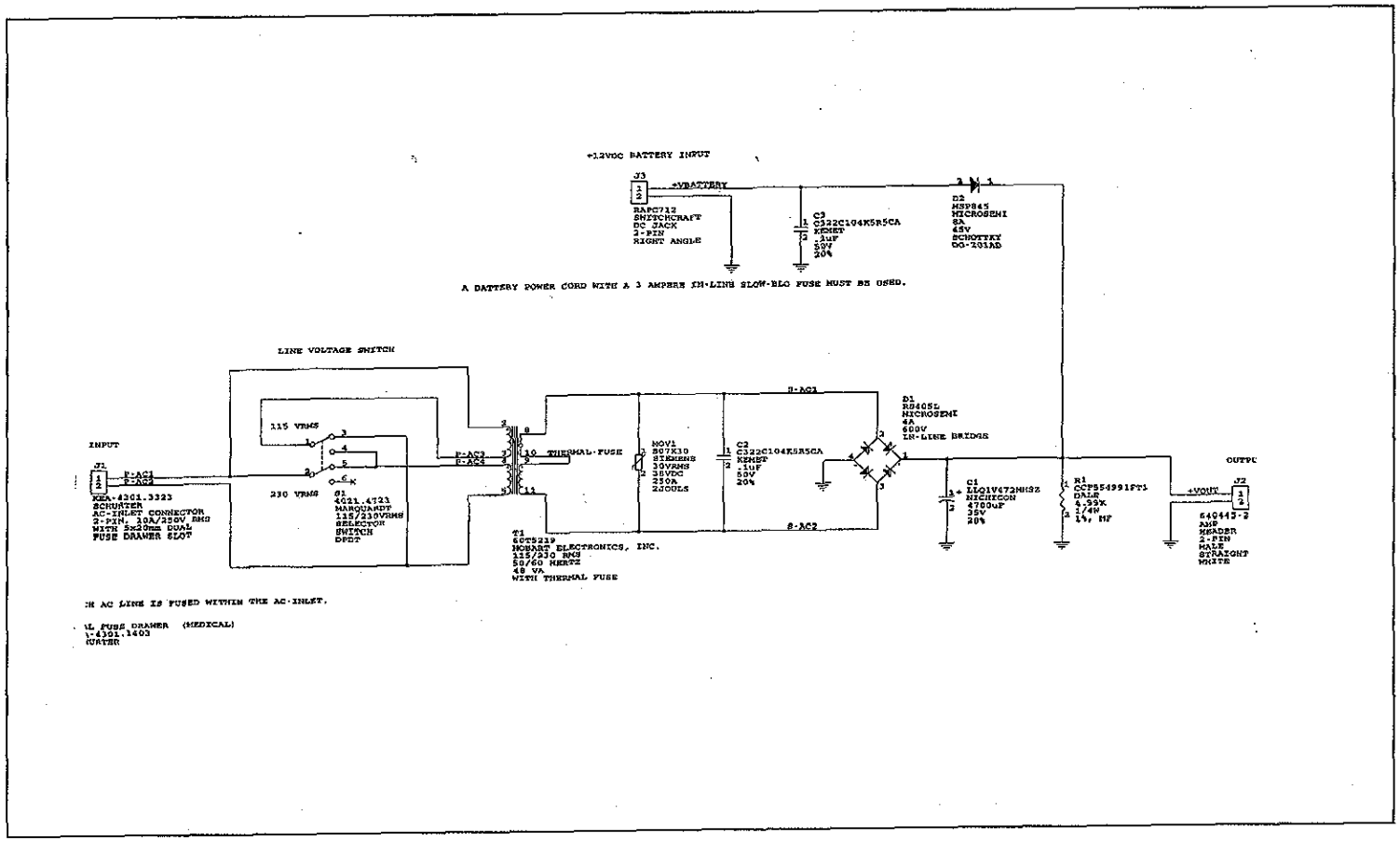
The schematics are of the revision level in effect at the time that this manual was last revised. New revisions may or may not be distributed in the future.


GROUNDS ARE TIED AT OR NEAR THIS CONNECTOR
BYPASS CAPACITORS
CONFIDENTIAL AND PROPRIETARY INFORMATION
REMstar LX
SCHEMATIC
RESPIRONICS INC.
REMstar LX Assembly


LEDS
MOTOR CONTROLLER
BYPASS CAPACITOR
LCD
CONFIDENTIAL AND PROPRIETARY INFORMATION
REMstar LX
SCHEMATIC
RESPIRONICS INC.
REMstar LX Assembly


GROUNDS ARE TIED AT OR NEAR THIS CONNECTOR
BYPASS CAPACITORS
CONFIDENTIAL AND PROPRIETARY INFORMATION
REMstar LX
SCHEMATIC
RESPIRONICS INC.
REMstar LX Assembly


LEDS
MOTOR CONTROLLER
LCD
BYPASS CAPACITOR
CONFIDENTIAL AND PROPRIETARY INFORMATION
REMstar Plus LX
SCHEMATIC
RESPIRONICS INC.
REMstar Plus LX Assembly
62-D-25231


+12VDC BATTERY INPUT
J3
+VBATTERY
RAPC712
SWITCHCRAFT
DC JACK
2-PIN
RIGHT ANGLE
C3
C322C104K5R5CA
KEMET
.1uF
50V
10%
D2
MBRB845
MICROSEMI
8A
45V
SCHOTTKY
DO-201AD
A BATTERY POWER CORD WITH A 3 AMPERE IN-LINE SLOW-BLO FUSE MUST BE USED.
LINE VOLTAGE SWITCH
115 VRMS
230 VRMS
INPUT
J1
KMA-4301.3323
SCHURTER
AC-INLET CONNECTOR
2-PIN, 10A/250V RMS
WITH 5x20mm DUAL
FUSE DRAWER SLOT
S1
4021.4721
MARQUARDT
115/230VRMS
SELECTOR
SWITCH
DPDT
THERMAL FUSE
MOV1
S07K30
SIEMENS
30VRMS
38VDC
250A
2JOULS
C2
C322C104K5R5CA
KEMET
.1uF
50V
20%
D1
RS405L
MICROSEMI
4A
600V
IN-LINE BRIDGE
C1
ELQ1V472MH92
NICHICON
4700uF
35V
20%
R1
CCF554991FT1
DALE
4.99K
1/4W
1% TOL
OUTPUT
J2
640445-2
AMP
HEADER
2-PIN
MALE
STRAIGHT
WHITE
T1
60T5219
HOBART ELECTRONICS, INC.
115/230 RMS
50/60 HERTZ
48 VA
WITH THERMAL FUSE
AC LINE IS FUSED WITHIN THE AC-INLET.
FUSE DRAWER (MEDICAL)
4301.1403
SURTER

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